Division 6

Dual Mini Sequencer Build Instructions

Make sure you have everything before you start soldering!

What You'll Need:

·Dual Mini Sequencer Kit · Soldering Iron · Solder · Wire Cutters · Small Phillips Screwdriver

Polarity doesn't matter

Polarity DOES matter

1

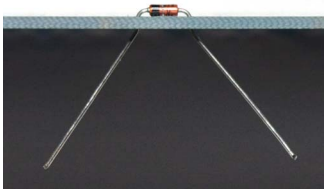
☐ Install Diode

To make assembly easier, we're going to install components from shortest to tallest. This way when you flip the board over to solder them, your work surface will hold them in place. Let's start with the diode.

To prep the leads, hold the body of the diode and bend the two leads 90 degrees.

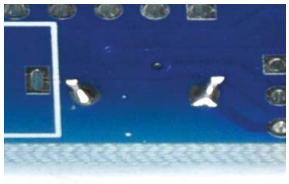
Insert the diode into the holes marked D71 on the main PCB. **Polarity does matter for diodes**, so when you insert it into the board, make sure the black stripe on the diode lines up with the stripe on the silkscreen pattern.

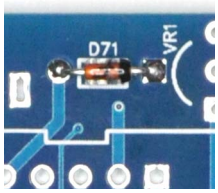
Bend the leads outward underneath the board to hold the diode in place.



Flip the board over, solder the diode leads, then trim them just above the solder joint.

For a quick soldering tutorial, visit **division-6.com/solder**





2

☐ Install Resistors

Working one value at a time, prep the leads of the resistors like you did with the diode.

Insert the resistors into their proper locations (see BOM). Polarity doesn't matter for resistors, but your board will look neater if you line up all the tolerance bands (gold) the same direction. Bend the leads outward underneath the board to hold the resistors in place.

Flip the board over, solder the resistor leads, then trim them just above the solder joint.

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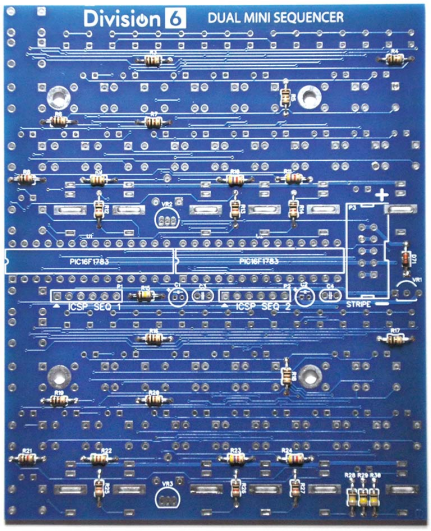
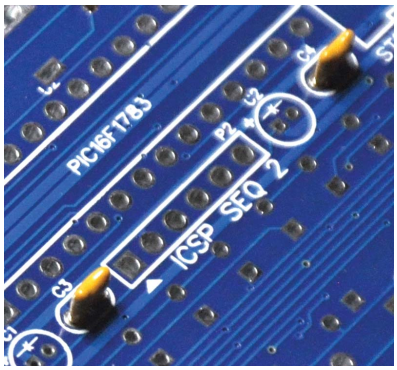


3

☐ Install Ceramic Capacitors

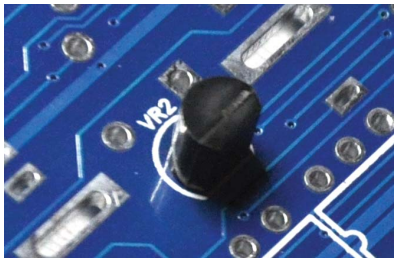
Install and solder C3 and C4. Polarity doesn't matter for these capacitors.



4

☐ Install TL431 Regulators

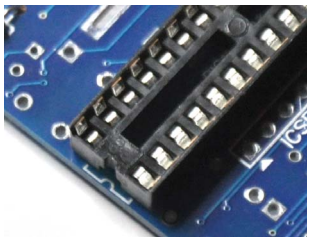
Insert VR2 and VR3 into the PCB, making sure that the flat sides of the parts are lined up with the flat sides on the silkscreen pattern. Solder and trim the leads.



5

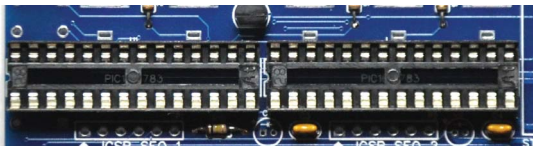
☐ Install IC Sockets

Insert the IC sockets into the board. Note that one end of each socket has a notch in it to indicate which end of the IC has pin 1. Make sure to align these notches with the notches indicated on the silk screen pattern.



Flip the board over and solder one pin on each corner of both sockets. This makes it easy to reposition the sockets in case they aren't seated all the way down against the board; just reheat the corner pins and adjust the socket positions as necessary.

Once you are happy with the positioning of the sockets, solder the remaining pins. The pins are short enough that they don't need to be trimmed.



6

☐ Install Electrolytic Capacitors

Insert C1 and C2 into the board. **Polarity does matter for electrolytics**, so make sure the (-) stripe is lined up with the - (round) hole on the PCB (and is opposite the "+" marking on the silkscreen pattern). Solder the capacitors into place and trim the leads.

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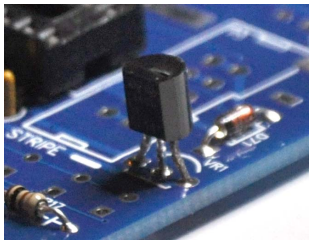
☐ Install L4931CZ50 Regulator

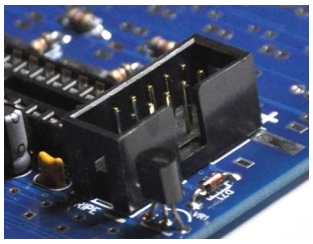
Insert VR1 into the board, making sure the flat side of the part is lined up with the flat side on the silkscreen pattern. Solder and trim the leads.



8

☐ Install Power Connector

Insert P3 into the board, aligning the notch in the connector with the notch indicated on the silkscreen pattern. Making sure the connector is flat against the board, then solder it into place. The leads are short enough that they don't need to be trimmed.



Flip the board over! From here on out, all the parts go on the other side

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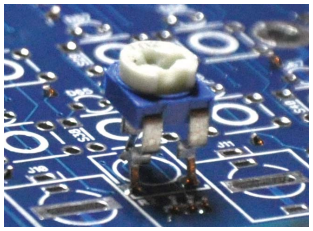
☐ Install Trim Pots

Insert R1 and R2 into the PCB and solder into place.



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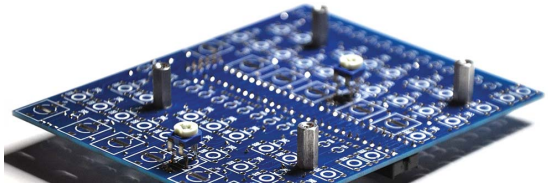
☐ Attach Standoffs

Using 4 silver screws, attach the 4 standoffs so that they protrude from the same side of the board you just installed the trim pots on. The holes for the standoffs aren't labeled, but they have thick silver rings around them.



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☐ Install LEDs

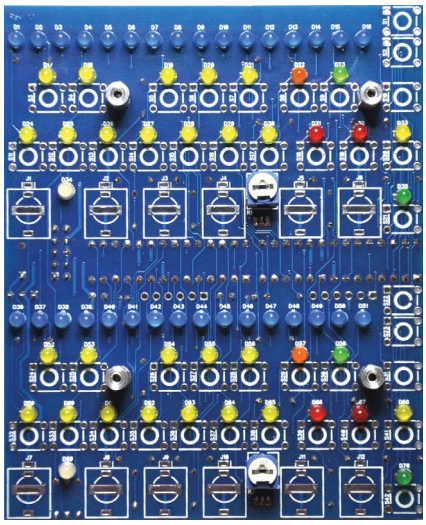
Insert the LEDs into the board, but don't solder them yet. **Polarity does matter for LEDs**; you'll notice that they all have a flat side on their package:

Continued...

If the flat side is hard to see, the LEDs also have a long and a short pin.

FLAT SIDE = SHORT PIN = NEGATIVE (-) = SQUARE PAD ON PCB

It doesn't really matter which color you put where, but the LEDs in your kit were chosen with the following layout in mind:



A note about green LEDs: Although they look very similar, there are two different colors of green LED included in the kit. If you hold them up to the light, you can see that some are darker than the others. The darker ones are the "True Green" RUN LEDs.

The LEDs actually need to be soldered sticking out above the board so that they protrude through the holes in the front panel. Ultimately the height is up to you, but we recommend mounting them so that they are flush with front surface of the front panel. If you mount them so that they stick out, they tend to get in the way when you are trying to push buttons.

A good trick to use to get all the LEDs the right height is to lay the front panel PCB upside-down on a hard flat table, set the main PCB upside-down on top of that so that the standoffs line up with the standoff holes in the front panel, then push all the LEDs down through their holes until they hit the table.

Solder one side of each LED first, then check to make sure they are all the same height. If one is not lined up, heat up the soldered lead and reposition it.

Once everything looks good, solder the remaining leads and trim them.

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☐ Install Buttons

Insert the tact switches into the PCB. They fit 2 different ways, and either way is fine. They will snap into place, which makes it easy to flip the board over and solder them. Make sure they are flat and straight as you insert them. Once they're all in, use the remaining screws to temporarily attch the front panel to the sequencer. This will ensure that the buttons line up with their panel holes as you solder them all into place. The pins are short enough that they don't need to be trimmed.

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☐ Install 3.5mm Jacks

If you have banana jacks, skip this step!

Remove the front panel. Insert the 12 jacks into the main PCB, soldering one pin of each as you go to hold it in place. Check to make sure that they are flat against the board and lined up with the silkscreen pattern; reheat and reposition if not. Once the jacks are all in straight, solder the remaining pins.

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☐ Install Front Panel

If you are using banana instead of 3.5mm jacks, insert them into the jack holes in the panel at this time and attach the mounting nuts to the back. Make sure the terminals on the jacks are aligned horizontally so that they will line up with the slots on the main board.

Place the front panel onto the sequencer. Use the remaining 4 screws to attach the panel to the standoffs. Note: there should be 2 different colors of screws; use the silver ones in the keyboard area and the black ones in the black area of the panel for maximum blending.

If you have 3.5mm jacks, install the nuts now. Becareful you don't scratch the panel when you're tightening them down!

If you have banana jacks, solder their tabs to the main PCB. Make sure you're ready though; removing the panel afterward means desoldering!

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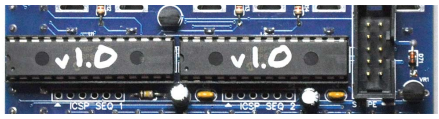
☐ Install Microcontrollers

Before inserting U1 and U2 into their sockets, you may need to bend the pins inward a bit so that they'll line up with the holes. Lay each IC on its side on a flat surface, then gently press down on the top of the chip so that the pins bend evenly. Repeat for the other side of each chip.

Insert the chips into their sockets, making sure that the pin 1 notches on each chip and socket are aligned with each other. Both ICs are identical, so it doesn't matter which goes into which.



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☐ Power Up

That's it, you're finished! It's time to test out your handiwork. Connect the sequencer to a Eurorack power supply using the provided cable. Turn on the power.

The sequencer should perform its startup test routine, in which all the LEDs are lit one row at a time.

After the test, the two white clock LEDs and the blue STEP 1 LED should be blinking.

Press the RUN button; your sequencer should now be sequencing through all 16 steps!

Troubleshooting:

- If the sequencer has no power at all, check to make sure the diode is installed the right direction. Also use a voltmeter to verify that your Eurorack power supply is working.
- If any LED seems to be stuck on, it may be installed backwards.
- For any other problems, start by checking all your solder joints. They should look shiny and smooth, not dull. Look for blobs and shorts between adjoining pads.

Still have problems? Email us at **support@division-6.com!**

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☐ Calibration

You can use the trim pot next to each CV OUT jack to calibrate the sequencers to 1 volt per octave.

Procedure:

- Connect a voltmeter to the CV OUT jack of the sequencer you want to calibrate
- Press RESET to make sure the sequencer is in Ready or Program mode (either will work)
- Press the OCTAVE UP button a few times to set the keyboard to the highest octave (green LED on steady)

Continued...

- Press the NOTE C button
- Adjust the trim pot until the meter reads as close to 4.000V as you can get it
- Check the C notes on the lower octaves by pressing the OCTAVE DOWN then NOTE C buttons. Each one should be an even voltage. If not, adjust the trim pot until they are as close as possible.

C4 (Highest Octave) = 4.000V
C3 (Higher Octave) = 3.000V
C2 (Middle Octave) = 2.000V
C1 (Lower Octave) = 1.000V
C0 (Lowest Octave) = 0.000V

The outputs of the sequencer are buffered, so they should maintain their voltages even when loaded down by another module. You may find, however, that the standard calibration doesn't work with certain modules. In this case, you can use the trim pot to adjust the calibration so that it is correct for your module.

--- THE END ---